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Solid Waste Disposal and Resource Recovery Division, DPWES
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Wastewater Planning and Monitoring Division, DPWES
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Planning and Design Division, DPWES
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TABLE OF CONTENTS

	<u>Page</u>
EXECUTIVE SUMMARY	V
INTRODUCTION	1
a. Watershed Management Program	2
1. Structural & Source Controls	18
2. Areas of New Development & Significant Redevelopment	20
3. Roadways	22
4. Retrofitting	23
5. Pesticide, Herbicide, & Fertilizer Application	27
6. Illicit Discharge & Improper Disposal	29
7. Spill Prevention & Response	31
8. Industrial & High Risk Runoff	32
9. Construction Site Runoff	33
10. Stormsewer Infrastructure Management	34
11. Public Education	35
12. Monitoring Programs	42
13. Other Monitoring Activities	48
14. Other Water Quality Enhancement Measures	50
b. Proposed Changes to the Stormwater Management Plan	55
c. Revisions to the Assessment of Controls & Fiscal Analysis	55
d. Annual Expenditures for the Reporting Period	57
SUMMARY	58
ACRONYM LIST	60
APPENDICES (Separate attachment)	

LIST OF TABLES

1 Breakdown of Total Maximum Daily Load (TMDL) Sampling Campaigns	10
2 2002 Zoning Ordinance Complaint Cases	22
3 Regional Facilities Bonded or Completed During 2002	23
4 Regional Facilities in Design or Land Acquisition Phase During 2002	23
5 Retrofitted and Rehabilitated Facilities with Enhancements	24
6 Rehabilitated Facilities with Enhancements	25

LIST OF FIGURES	Page
1 Perennial Stream, SPS Team Performing Survey	3
2 Perennial Stream Workshop	3
3 Map Depicting Old and New RPA Areas in Difficult Run Watershed	4
4 Stream Gauging, TMDL Study in Accotink Watershed	9
5 TMDL Study Sampling Locations, Upper Portion of Accotink Watershed	11
6 Bio-retention Pond, Mclean Community Center	13
7 Sand Garden, Mt. Vernon Police Station	13
8 Snake Den Restoration Project (2003)	14
9 Snake Den Restoration Project (2003)	14
10 Snake Den Restoration Project (2003)	14
11 Snake Den Restoration Project (2003)	14
12 Snake Den Restoration Project (2003)	15
13 Snake Den Restoration Project (2003)	15
14 Cinnamon Creek Restoration Project (2001-before restoration)	15
15 Cinnamon Creek Restoration Project (2003-after restoration)	15
16 Rock Sediment Trap at Sunset Ridge, Centreville	18
17 Rock Sediment Trap at Sunset Ridge, Centreville	18
18 Stormwater Pond at Government Center	19
19 Stormwater Pond at Government Center	19
20 New Extended Dry Regional Pond	24
21 Retro-fitted Pond in Little Rocky Run, Summer 2002	25
22 Retro-fitted Pond in Little Rocky Run, Summer 2003	25
23 Wastewater Collection Division, Close-Circuit TV'ing a Sewer Line	30
24 The Recycle Guys	36
25 Computer Recycling	36
26 Celebrate Fairfax 2003, SWPD's Booth	39
27 Outreach Opportunities, 2003 Envirothon Event	39
28 Wet Weather Sampling Equipment	43
29 Sampling for the Fecal Coliform Monitoring Program	44
30 Dogue Creek Monitoring Station	45
31 SPS Team Sampling for Benthic Macroinvertebrates	45
32 SPS Team Sorting Benthic Macroinvertebrates	46
33 FCPA's Pond Transformation to a BMP Facility (old pond)	51
34 FCPA's Pond Transformation to a BMP Facility (old pond's erosion)	51
35 FCPA's Pond Transformation to a BMP Facility (new forebay area)	51
36 FCPA's Pond Transformation to a BMP Facility (boardwalk for visitors)	51
37 FCPA's Pond Transformation to a BMP Facility (New created pond)	51
38 Indoor Benthic Macroinvertebrate Identification Class	54

LIST OF APPENDICES

- A VPDES Permit No. 0088587, Fairfax County's Authorization to Discharge Under the Virginia Pollutant Discharge Elimination System and the Virginia State Water Control Law, in Compliance with the Provisions of the Clean Water Act
- B Perennial Stream Protocol and Field Sheet
- C Countywide Watershed Protection and Restoration Strategy
- D Fairfax County's Letter to "All Architects, Builders, Developers, Engineers, and Surveyors practicing in the County, May 14, 2002, "Innovative BMPs - 3.07 Enhanced Extended Detention Dry Ponds Now Acceptable for Public Maintenance in Residential Areas and on Government Sites": and October 2, 2001 Revised procedures for Requests to Use Innovative Best Management Practices.
- E Planning and Design Division (PDD) Bioretention Facilities/Rain Gardens
- F NVSWCD Brochure to Neighborhoods near Kingstowne Stream Restoration Project
- G New Millennium Occoquan Watershed Task Force Recommendations
- H Lake Barcroft Watershed Improvement District CD
- I Pesticide, Herbicide and Fertilizer (PH&F) Application Program
- J PH&F Survey Questionnaire and List of agencies Surveyed
- K You and Your Land, A Homeowner's Guide for the Potomac Watershed, NVSWCD
- L Procedural Memorandum No. 71-01, Illegal Dump Site Investigation, Response and Cleanup
- M 2002 Incidents Involving Hazardous Materials with Runoff Potential
- N Erosion and Sediment Control Permits - 2003
- O Stormsewer Infrastructure Management Plan and Schedule
- P Monitoring Programs, Field Procedure Manual and Sampling Protocol January 2003
- Q VPDES Stormwater Permitted Facilities
- R Watershed Monitoring Program
- S Bioassessment Monitoring Program
- T Floatables Study / Questionnaire / Adopt-A-Stream
- U NVSWCD, Program Overview, Volunteer Stream Monitoring Program
- V Conservation Currents, Five Issues from 2003, Published by the Northern Virginia Soil and Water Conservation District

EXECUTIVE SUMMARY

The 2003 Annual Report on the Municipal Separate Storm Sewer System (MS4) in Fairfax County was prepared in compliance with the Commonwealth of Virginia, Department of Environmental Quality, Virginia Pollutant Discharge Elimination System (VPDES) Permit No. 0088587 (***Appendix A***) reissued to Fairfax County on January 24, 2002 for another five years. The permit is in compliance with the provisions of the Clean Water Act as amended and pursuant to the State Water Control Law and regulations adopted pursuant thereto. The permit authorizes all existing and new stormwater point source discharges to waters of the state from those portions of the MS4 owned or operated by Fairfax County, except as prohibited under Part I.A.1.b of the permit. The County's VPDES permit covers the jurisdictional land area of Fairfax County excluding the Towns of Clifton, Vienna and Herndon, the City of Fairfax, as well as Fort Belvoir, and the Virginia Department of Transportation's road system. This report is intended to satisfy the Annual Report submittal requirements of the permit, covering the period January 1, 2003 through December 31, 2003, and is the seventh annual report. This report is prepared in accordance with the requirements of section I.C.4 of the permit and summarizes the County's collective efforts (government agencies and non-governmental organizations) in stormwater management and reduction in nonpoint source pollution to the "maximum extent practicable." Described in this report is the Stormwater Management Program in the County detailing the various components associated with or related to stormwater control and pollution prevention. The accomplishments and progress made by the various organizations during 2003 is also delineated in the report.

Fairfax County received recognition by the Chesapeake Bay Program as a Gold Award recipient for the second time since 1997 under the Chesapeake Bay Partner Community program. "The Chesapeake Bay Partner Community Award recognizes, encourages, and supports local government in the Chesapeake Bay watershed whose actions demonstrate their commitments to protecting and restoring the Chesapeake Bay, its rivers, and its streams."

Some of the agencies and organizations involved in stormwater management are Northern Virginia Soil and Water Conservation District (NVSWCD), Virginia Department of Forestry (VDOF), Environmental Horticulture Division (EHD) of Fairfax County Extension Service, Northern Virginia Regional Commission (NVRC), Environmental Quality Advisory Council (EQAC), Department of Health (HD), Fire & Rescue Department (FRD), Department of Planning and Zoning (DPZ), and Fairfax County Park Authority (FCPA), Fairfax County Public Schools (FCPS), Department of Public Works and Environmental Services (DPWES). They have been involved in promoting improved water quality through a variety of activities centering on the common goal of improving the environment. The following is a list of their activities and collective efforts in support of the mission of effective stormwater control:

- define a strategic plan for comprehensive stormwater management,
- develop countywide watershed protection and restoration strategy
- develop watershed management plans for major watersheds and sub-watersheds
- expand public outreach and environmental education programs
- seek research opportunities to develop alternative methods of improving water quality,
- implement water quality and quantity control practices,
- encourage and implement environmentally sensitive projects,
- conduct inspection and maintenance programs for stormwater control systems and structures to ensure their effectiveness,
- implement stormwater control retrofits,

2003 Annual Report

- share resources and information for the purposes of educating the citizenry and developing strategies to promote good water quality improvement practices,
- conduct stream monitoring and evaluation programs,
- provide environmental analysis on proposed land use changes and development, including the effects on nearby streams and water quality,
- provide other agencies and private consultants advice regarding the adequacy of erosion and sediment controls and stormwater management techniques on development sites,
- provide technical advice on stream stabilization and restoration techniques,
- screen storm system outfalls for detection and removal of illicit discharges, and
- provide technical support to citizens and developers

Fairfax County's Watershed Management Program includes conformance to regulations, development and enforcement of policies, watershed planning, establishment of engineering design criteria, safety aspects, land rights and restrictions, performance, and maintainability. The County recognizes that alternatives to achieving water quality improvement goals have to be addressed continuously in order to provide environmentally sensitive and more cost effective programs and projects for its citizenry. The Stormwater Planning Division (SWPD) promotes policies to improve and protect the quality of life and support environmental goals of the County and is working to develop a framework that would address the overall environmental goals and objectives of the County as well as ensure a link between regulations and project implementation through the planning, design, construction, and maintenance phases. The County's structural stormwater control program involves the collection, detention and control of stormwater discharge with the objective of meeting the overall goal of reducing phosphorous discharge levels by 40 percent (50 percent in the Water Supply Protection Overlay District).

Fairfax County has been a participant in the NPDES Phase I permit program since the early 1990's, having conducted extensive countywide water quality monitoring as part of the Part I and Part II permit application process, received the first permit in 1997, reapplied for another five years in 2001 and received the second permit in 2002. Over the 10 plus years many positive changes have taken place in the County's Stormwater Management Program which at the onset was primarily focused on water quality monitoring.

The first change, 1998, was the funding of a Stream Protection Strategy (SPS) survey which included 114 principal monitoring sites in 30 watersheds over 400 square miles of land and included biological monitoring (aquatic insects and fish) and a general evaluation of the localized watershed features (vegetation and in-stream features). The County had long ago recognized the need to protect the living environment of the stream valleys and the SPS study provided valuable information defining the state of our streams both biological and physical. Earlier stream evaluation studies had focused solely on erosion, conveyance of water downstream and flood control. Recently, a Countywide Watershed Protection and Restoration Strategy has been evolving as a follow-up to the Stream Protection Strategy (SPS) 2001 baseline study, with the overall goal of developing countywide guidance for the application of selected protection and restoration strategies at the subwatershed scale. The SPS baseline study established three broad management categories for future watershed protection and restoration efforts, based primarily on overall stream rankings of biological quality and projected development. The three management categories include Watershed Protection, Watershed Restoration Level I, and Watershed Restoration Level II. Details of the Countywide Watershed Protection and Restoration Strategy project and maps of the locations of the three management categories within the County's watersheds can be found in [Appendix B](#).

The next phase to protecting the County's valuable resource, the stream valleys, was the County response to the 2001 State amendments to the Chesapeake Bay Preservation Area Design and Management

2003 Annual Report

Regulations by the Chesapeake Bay Local Assistance Board. Amendments to Chapter 118 of the County's Chesapeake Bay Preservation Ordinance (CBPO) changed the wording of what is protected by RPA to "tributary streams" with "water bodies with perennial flow". These amendments include a requirement to identify water bodies with perennial flow by using a scientifically valid method to conduct site-specific surveys. Perennial stream protocols were developed by the County and approved by the State, and the County embarked on a survey of the headwater reaches of streams to designate perennial streams upstream of existing RPAs. The results of the survey were adopted by the Board of Supervisors in November 2003 as amendments to the County's Chesapeake Bay Preservation Ordinances. This extensive perennial stream field survey resulted in an increase of 330 miles of perennial streams, a 52% increase, 638 miles to 968 miles. This increase in stream miles established 17.06 square miles (or 10,921.57 acres) of new RPA in the county, an increase of 31% from 55.3 square miles to 72.3 square miles. **Figure 3** illustrates the 1993 RPA streams (depicted in green) and the new 2003 RPA streams (depicted in red) of the Difficult Run Watershed. The County Chesapeake Bay Preservation Area maps display the boundaries of the RPAs adopted by the Board in 1993 and the additional RPAs adopted by the Board in 2003 in greater detail. The maps display the general locations of the RPA boundaries for planning purposes and the actual limits may be further refined by detailed field studies conducted at the time a plan is submitted to obtain a permit to develop a property. These maps can be viewed at:

<http://www.fairfaxcounty.gov/maps/nofind/PdfLoader/default.htm>

The development of Watershed Management Plans for all 30 watersheds is essential in the County's Watershed Planning Program. Data from the most recently completed Countywide Physical Stream Assessment of stream conditions integrated with the SPS study and other watershed and stream monitoring information is being used for evaluating the impact of watershed changes on stream quality. The stream assessment included an evaluation of overall stream habitat and physical conditions, and descriptions of features such as stream crossings, stormwater drainage pipes, utility crossings, streambank erosion, deficient buffers, illegal dump sites and stream obstructions. Watershed plan development for entire watersheds, sub-watersheds, and/or groupings of watersheds is being implemented over an anticipated 6 year period. The watershed plans are expected to provide an assessment of management needs and prioritize solutions within each watershed. The overall goal for the development of watershed management plans is to provide a consistent basis for the evaluation and implementation of solutions for protecting and restoring the receiving water, the ecological systems and other natural resources of the County. Citizen Input is an important component to each watershed management plan. The County has developed an extensive public involvement campaign which involves engaging the community and hosting public meetings to develop solutions to the problems identified as part of the watershed plan development process. Major milestones in the development of the County's watershed management plans in 2003 include: Draft of Little Hunting Creek Watershed Plan; Popes Head Creek Watershed citizen advisory group was formed; and Cameron Run Watershed citizen advisory group started.

In 2002, county staff formed a multi-agency committee to develop a unified position on the use of regional ponds, as well as alternative types of stormwater controls, as watershed management tools. During 2003, the Regional Pond Subcommittee provided recommendations regarding the use of regional ponds as well as other innovative and non-structural techniques as part of watershed management. The focus of the effort was to determine in a deliberate and comprehensive way whether modifications to current practices, policies and regulations would be beneficial. After much deliberation, research, and consultation with the public and stakeholders, the Subcommittee identified 61 recommendations to improve Fairfax County's stormwater management program and to clarify the role of regional ponds in that program. The general consensus is that regional ponds do play a role in the County's stormwater management program but their design needs to address several ecological, economical and social

2003 Annual Report

concerns while working in concert with better site designs and low impact development practices. The Subcommittee is currently coordinating the development of an implementation plan for all recommendations, including a time line and assignments. Several of the recommendations address the need to make modifications to the County's Public Facilities Manual (PFM), stormwater policies, codes and ordinances.

Currently, the County is engaged in two ongoing Total Maximum Daily Load (TMDL) studies. The first of these projects represents a 4.5 mile segment of Accotink Creek in Fairfax County that was placed on the 1998 Virginia 303(d) TMDL priority list for fecal coliform impairment. Fairfax County entered into an agreement with the USGS, Department of Conservation and Recreation (DCR), and Department of Environmental Quality (DEQ) in 1998 to complete the source tracking study which forms the basis for development of the TMDL for Accotink Creek. A follow-up study was initiated in August 2001 to identify and isolate specific areas contributing human fecal coliform bacteria within the watershed. Fairfax County staff is supporting this study with field sampling efforts as well as providing assistance with laboratory analysis for this three-year project. The second of these projects was at the request of the DEQ, the Northern Virginia Regional Commission entered into an agreement with the Commonwealth to prepare an Implementation Plan for the EPA-approved TMDL developed for bacteria in Four Mile Run. That TMDL was approved on May 31, 2002. Work has begun on the Implementation Plan with a goal to complete the plan by early 2004. A Technical Advisory Committee (TAC) was formed in May 2003 to provide input and guidance for the project. Staff from all four jurisdictions, various non-governmental organizations, the Virginia Department of Conservation and Recreation, the Virginia Department of Environmental Quality and NVRC participated on the TAC.

Two letters to industry on the use of BMPs have been sent to all Architects, Builders, Developers, Engineers, and Surveyors practicing in the County, one in 2001, the other in 2002, (***Appendix D***). These letters are one of the initial steps in adopting and encouraging the use of "Better Site Design" and "Low Impact Design" techniques for improving water quality control in the County. ***Procedures for requests to use innovative Best Management Practice (BMP) facilities in Fairfax County*** are defined in a Letter to Industry dated October 2, 2001. This letter to industry details the application procedure, discusses the general design standards and application conditions, provides a list of Innovative BMPs and includes an "Innovative BMP Tracking Form." The second letter, ***Innovative BMPs - 3.07 Enhanced Extended Detention Dry Ponds Now Acceptable for Public Maintenance in Residential Areas and on Governmental Sites*** was sent on May 14, 2002. Enhanced detention dry ponds are now acceptable for public maintenance in residentially zoned areas and on governmental sites subject to compliance with the revised design standards in the "Guidelines for the Use of Innovative BMPs in Fairfax County, Virginia."

Two stream bank stabilization projects, the Difficult Run mainstem in Oakton and the Snake Den Branch in Reston, were sponsored and jointly constructed by VDOF, Reston Association (RA), NVSWCD and the Fairfax County DPWES. These stabilization projects were successful largely due to the partnership between the four organizations. The main purpose of these projects was the reduction of erosion for the protection of infrastructure and sediment reduction for the Chesapeake Bay watershed. In the Difficult Run Stream Valley project, approximately 60 linear feet of stream bank was stabilized utilizing root wads, coconut fiber matting, riprap, and native vegetation and was completed in approximately one week. In the Snakeden restoration project, approximately 1000 linear feet of stream bank was stabilized using natural materials: root wads (providing excellent fish habitat), coconut fiber matting, 9 biologs, over 300 live stakes, over 150 plantings, and in-stream structures.

The restoration of 150 feet of stream bank in Cinnamon Creek in 2001 has proven itself during the excessive amounts of rain in 2003 (approximately 1.5 times the average annual amount) and it has survived Hurricane Isabel. The Kingstowne Stream Restoration Project discussed in full in the 2001

2003 Annual Report

VPDES report, continues to improve and regenerate. Today grass is growing on the floodplain, live stakes are in bloom on the banks, and tree and shrub seedlings are maturing. NVSWCD continues to monitor the Kingstowne and Cinnamon Creek streams and participate in similar restoration or stabilization projects. Additional information concerning both restoration projects is available on the web at the following addresses.

<http://www.fairfaxcounty.gov/nvswcd/kingstowne.htm> (Kingstowne) or,

<http://www.fairfaxcounty.gov/nvswcd/cinnamoncreek.htm> (Cinnamon Creek).

On July 7, 2003, County staff presented the Board of Supervisors with an implementation plan responding to each of the 29 recommendations of the report prepared by the New Millennium Occoquan Watershed Task Force co-chaired by NVRC. The task force was established as part of the 2002 Board of Supervisors celebration of the 20th anniversary of the downzoning of nearly 41,000 acres of land in the Occoquan Watershed for the purpose of protecting the Occoquan Reservoir (one of the County's major sources of drinking water) from nonpoint source pollution. The Task Force's report which presented a series of recommendations addressing watershed management issues was first presented to the Board of Supervisors on January 27, 2003. Continued progress on implementation of the report's recommendations is anticipated.

The Environmental Quality Corridor (EQC) policy, as found in the Environment section of the Policy Plan volume of the County's Comprehensive Plan, does not directly address stormwater discharges; however, it is particularly relevant to the County's overall water quality management program as it serves to identify, protect, and, in some cases, restore "environmentally-sensitive resources". While there is no County regulation requiring EQC protection (RPA and floodplain provisions in the County Code protect many, but not all, EQC areas), the application of the EQC policy during the zoning process has been effective in protecting, and in some cases restoring, environmentally-sensitive areas.

The floodplain management program in Fairfax County, in addition to reducing flood risks, provides water quality benefits in several ways. In any floodplain served by a drainage area of greater than 360 acres (major floodplains), development and disturbance is strictly limited. Considered in every proposed use in a floodplain, including minor floodplains with drainage areas between 70 and 360 acres, are the environmental impacts resulting from the proposed work. The overall effect of this program, together with the restrictions in Fairfax County's Zoning Ordinance which prohibit increases in the 100-year water surface elevation except for road crossings and certain county-driven improvements, is to preserve and to limit the disturbance to large areas within floodplains.

DPWES conducts inspections and maintenance of regional ponds and dry ponds located within residential developments, along with certain underground chambers, and percolation trenches within residential developments. In addition, DPWES conducts inspection and enforcement of maintenance agreement terms for the privately maintained facilities, including wet and dry ponds, culvert storage areas, sand filters, oil/grit separators, percolation trenches, inlet treatment devices, rooftop storage, and all commercial and/or industrial detention facilities. In addition, in 2003, ten stormwater management ponds, serving a total drainage area of 436 acres, were rehabilitated and/or retrofitted. Rehabilitations consisted of repair, replacement, or modification of the facility to meet or exceed safety and functional requirement and to extend the service life of each facility. Retrofits employed the use of shallow wetland marshes to enhance nutrient uptake and provide an increase in water absorption and transpiration. A secondary effect of wetland marshes and naturally vegetated pond floors is the creation of habitat for wildlife.

2003 Annual Report

Lake Barcroft Watershed Improvement District continues its urban BMP studies with a special emphasis on the 14.5 square mile Barcroft Watershed along the upper reaches of the Holmes Run and Tripps Run. The six-year EPA grant under Section 319 of the Clean Water Act to identify and demonstrate appropriate urban BMPs has concluded with a Final Report in the form of an interactive CD-ROM containing voluminous text and hundreds of digital color pictures.

The Fairfax County Public Schools curriculum includes courses in Environmental Sciences, Biology, Chemistry and Geosystems. Students study basic ecology concepts, the hydrologic cycle and how to apply them to the Chesapeake Bay Watershed ecosystem. These educational programs have a direct lasting effect on improving water quality as educated students form lasting habits toward preventing nonpoint source pollution. In 2003, the Solid Waste Management Program (SWMP) continued to support school recycling efforts through the SCRAP (Schools County Recycling Action Program) program. SWMP published a catalog (the SCRAPbook) of the many educational opportunities available to teachers and students through the SWMP and the Clean Fairfax Council. SWMP awarded grants worth \$3000 to six Fairfax County public schools to fund school environmental projects. Finally, a contest was held to name the new county recycling mascots – the Recycle Guys. Nearly 500 FCPS students entered the contest.

The County is currently conducting a Pesticide, Herbicide and Fertilizer (PH&F) survey to evaluate current methods of application and prepare recommendations that are designed to reduce the quantity of pollutants that may enter the MS4 and streams in the County. The data will be used to identify areas where the use of pesticides, herbicides and fertilizers can be reduced on county owned properties by implementing non chemical or reduced chemical management practices.

Fairfax County's Dry Weather Screening program has been a part of the permit for the past 7 years. The goal of this comprehensive monitoring program is to continue ongoing efforts to detect the presence of illicit connections and improper discharges to the MS4. During 2003, extensive field screening efforts lead by the United States Geological Survey (USGS) and county staff were carried out in the Accotink Creek Watershed as a result of a proactive implementation phase for a TMDL which was developed for fecal coliform impairment for portions of Accotink Creek.

Conversely, Fairfax County's program for Wet Weather Screening is a new requirement in the permit. The goal of the program is to investigate and address known areas within the County that are contributing excessive levels of pollutants to the MS4. A GIS-based screening procedure for identifying potential "hot-spots" in the wet weather screening program will be developed as part of a comprehensive monitoring program.

In addition, the Industrial and High Risk Runoff Monitoring, which may include monitoring for pollutants in stormwater discharges to the MS4, is a new requirement in the permit. The goal of the County's program is to identify and possibly investigate and monitor industrial and other high-risk areas to determine if they are contributing substantial pollutant loading to the MS4. Possible areas include: landfills; other treatment, storage or disposal facilities; hazardous waste treatment, storage, disposal and recovery facilities; facilities subject to the Emergency Planning and Community Right-To-Know Act (EPCRA) Title III Section 313. During 2003 a list of all VPDES permitted stormwater industrial facilities that discharge into the Fairfax County's MS4 was obtained from DEQ.

NVSWCD's Volunteer Stream Monitoring Program supplements the SPS program as well as provides other services to the environmental community in Fairfax County. The number of monitoring sites and active monitors are steadily increasing. In 2003, 30 monitoring sites were active during the winter, 35 sites were active during spring, 55 sites were active for summer, and 38 sites were active for fall monitoring. During 2003, volunteers logged over 3,305 Earth Team hours. Approximately 225 students

2003 Annual Report

were introduced to stream monitoring through indoor workshops at schools, outdoor special programs and science fair projects. NVSWCD conducts training sessions for monitors, conducts special programs at schools, make presentations at environmental conferences, sponsors tours, and publishes a newsletter. In addition they partner with other groups in the County government, Homeowners Associations, County Parks, local universities, and private environmental organizations.

Funding for the County's stormwater control programs continues to be primarily through General Fund appropriation, along with some pro rata share revenues for capital improvement projects. Ongoing programs within various County agencies continue through their respective annual appropriations. Several privately funded organizations and volunteer groups provide support for monitoring programs, water quality improvements, and public awareness programs. Funding for maintenance and inspections of both public and privately maintained facilities continues through the County General Fund. Other programs such as the Department of Health programs and NVSWCD programs are funded by a combination of State, County, and grant funds. The private organizations, which conduct water quality programs, are usually privately and/or grant funded.

A total of 17 TMDLs are currently on the 2002 impaired waters listing (DEQ's 303(d) list) with others to be added by an imminent 2004 listing. These TMDLs will require development between 2006 and 2014 and implementation of mitigating plans following their approval. In addition, the threat of a Chesapeake Bay and Potomac River Basin wide TMDLs looms if mitigating efforts do not reverse the existing water quality impairment to the Bay by 2010. In light of this, several regulatory actions could be imposed on localities, including Fairfax County, to implement additional corrective measures and curtail development until the impairment to the Bay is alleviated.

The County's stormwater business area's core leadership team which was formed in 2001 to help define long-term strategic planning and thinking for stormwater management in the County completed the development of an environmental scan and strategic plan in 2003. This core leadership team will continue to pursue the implementation of action steps from the strategic plan for the stormwater business area. It is generally recognized that the future stormwater management program will be increasingly challenged to achieve full compliance with changing permit requirements and increasing state and federal mandates as a result of Chesapeake Bay commitments and TMDLs. Strategic efforts will have to focus on how to maximize existing resources and obtain new resources to keep pace of this increasing demand to improve ecological health of our watersheds and preserve the quality of life for the community.